

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
30 June 2005 (30.06.2005)

PCT

(10) International Publication Number  
**WO 2005/059038 A1**

(51) International Patent Classification:  
C22B 7/02, C09C 1/00, 3/00, C22B 3/04

C09C 1/22,

(74) Agent: ROBIC; Centre CDP Capital, 1001, Square Victo-  
ria, Bloc E - 8e étage, Montréal, QC H2Z 2B7 (CA).

(21) International Application Number:  
PCT/CA2004/002147

(22) International Filing Date:  
16 December 2004 (16.12.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
2,453,005 17 December 2003 (17.12.2003) CA

(71) Applicant (for all designated States except US): FER-  
MAG INC. [CA/CA]; 1075 côte du Beaver Hall, Bureau  
200, Montréal, QC H2Z 1S5 (CA).

(72) Inventors; and

(75) Inventors/Applicants (for US only): MORENCY, Mau-  
rice [CA/CA]; 112 De Picardie, Saint-Lambert, QC J4S  
1T6 (CA). SHAN, Guoji [CA/CA]; 1768, du Collège,  
Ville St Laurent, Québec H4L2M7 (CA). FONTAINE,  
Denise [CA/CA]; 6230, 24e Avenue, Rosemont, Montréal  
H1T3M5 (CA).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,  
SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,  
GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: A HYDROMETALLURGICAL SEPARATION PROCESS OF STEEL MILL ELECTRIC ARC FURNACE (EAF)  
DUST AND THE PIGMENTS OBTAINED BY THE PROCESS

(57) Abstract: A hydrometallurgical process for the treatment of steel mill electric arc furnace (EAF) dust containing agglomerates  
of small ferrite particles and larger magnetite particles, the process comprising the steps of: a) washing the EAF dust in water to  
dissolve soluble salts, metals and simple oxides contained in the dust, said washing step being performed under agitation and with an  
alkaline pH; b) decanting the solution of step a) to obtain a supernatant liquid containing the dissolve salts, metals and simple oxides  
and a slurry containing ferrites and magnetites, a non toxic amount of leachable lead and a reduced amount of calcium; c) separating  
the slurry and the supernatant liquid; d) adding to the slurry obtained in step c) an anionic surfactant to disperse the ferrite particles  
adsorbed on the magnetite particles; and e) treating the slurry from step d) to produce pigments selected from the group consisting  
of ferrite pigments, magnetite pigments and ferrite/magnetite pigments.

WO 2005/059038 A1